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काँच गलाने की टैंड भट्टी के लिए म्यूलाइट की अग्निसह सामग्रियाँ — विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

MULLITE REFRACTORIES FOR GLASS MELTING TANK FURNACES — SPECIFICATION

(Second Revision)

ICS 81.080

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 2005

Price Group 1

Refractories Sectional Committee, MTD 15

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Refractories Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1962 and subsequently revised in 1981. In this revision, following modifications have been made:

a) Reference clause has been added;
b) Chemical composition has been modified;
c) Physical requirements have been modified;
d) Title of the standard has been modified; and
e) Standard marking clause has been modified.

The term mullite refractories is applied to refractories made of calcined kyanite, sillimanite for andalugitc. Sillimanite refractories have high refractories, low co-efficient of expansion, high resistance to shock by impact, and high mechanical strength. Their high resistance to furnace gases and to the materials like soda, borax, lime and frits used in glass-marking has proved their usefulness in glass melting tank furnaces.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

MULLITE REFRACTORIES FOR GLASS MELTING TANK FURNACES — SPECIFICATION

(Second Revision)

1 SCOPE

This standard covers the requirements for mullite refractories for lining of glass melting tank furnace.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

IS No.	*Title*
1335 : 1979	Methods for the direct determination of alumina in refractory materials (*first revision*)
1387 : 1967	General requirements for the supply of metallurgical materials (*second revision*)
1527 : 1972	Methods for chemical anlaysis of high silica refractory materials (*first revision*)
1528	Methods of sampling and physical tests for refractory materials :
(Part 2) : 1974	Determination of refractoriness under load *(first revision)*
(Part 4) : 1980	Determination of cold crushing strength (*first revision*)
(Part 6) : 1974	Determination of permanent change after heating (*first revision*)
(Part 7) : 1974	Methods of sampling and criteria for conformity *(first revision)*
(Part 8) : 1974	Determination of apparent porosity *(first revision)*
4041 : 1987	Glossary of terms relating to refractory materials *(first revision)*

3 TERMINOLOGY

For the purpose of this standard, the definition given in IS 4041 shall apply.

4 SUPPLY OF MATERIAL

4.1 General requirements relating to the supply of sillimanite refractories for glass melting tank furnaces shall be as laid down in IS 1387.

4.2 The refractories shall be compact, of homogeneous texture and free from cracks, voids and other flaws. They shall be burnt evenly throughout and shall have sufficient mechanical strength and no soft corners.

5 SAMPLING

Representative samples shall be drawn according to the scheme of sampling given in IS 1528 (Part 7) for carrying out tests specified in this standard.

6 TOLERANCE ON SIZE

Variation from specified dimensions, covering both warpage and shrinkage shall be allowed to the extent ± 1 percent or ± 1 mm whichever is greater.

7 CHEMICAL COMPOSITION

Refractories when tested in accordance with the methods given in IS 1527 or IS 1335 shall contain not less than 58 percent alumina, and not more than 1.0 percent iron oxide, Fe_2O_3.

8 REFRACTORIES UNDER LOAD

When determined according to the method given in IS 1528 (Part 2) the refractories shall have a refractorieness under load of not less than 1 500°C.

9 PHYSICAL PROPERTIES

The material shall comply with the requirements given in Table 1.

10 PERMANENT LINEAR CHANGE AFTER REHEATING

When refractories are uniformly heated to 1 500°C according to the method given in IS 1528 (Part 6) maintained at the temperature within a variation of ± 20°C for 5 h and slowly cooled, they shall not show a linear change of more than 0.5 percent of the original length.

Table 1 Phyical Characteristics of Mullite Refractories for Glass Melting Tank Furnaces

(*Clause* 9)

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test, Ref to IS (4)
i)	Apparent porosity, percent, *Max*	20	1528 (Part 8)
ii)	Permanent linear change 1 550°C maintained within ± 20°C for 5 h, percent, *Max*	± 0.5	1528 (Part 6)
iii)	Cold crushing strength, MPa, *Min*	50	1528 (Part 4)

11 COLD CRUSHING STRENGTH

When tested according to the method given in IS 1528 (Part 4) the cold crushing strength shall not be less than 50 MPa.

12 MARKING

12.1 The refractory bricks shall be clearly marked with the manufacturer's name or trade-mark.

12.2 BIS Certification Marking

The refractory bricks may also be marked with the Standard Mark.

12.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act,* 1986 and Rules and Regulations made thereunder. The details of condition under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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This Indian Standard has been developed from Doc : No. MTD 15 (4561)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Printed at Prabhat Offset Press, New Delhi-2